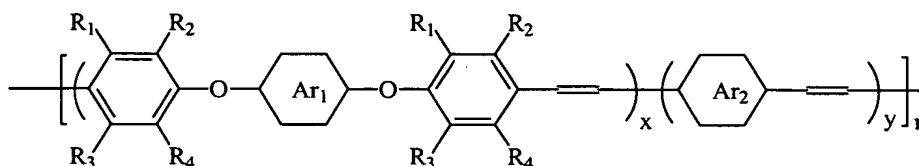


efficiency of 0.53cd/A and a maximal electroluminescence peak at 503nm.

What we claim is:

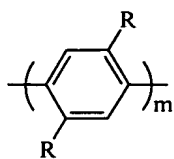
1. An energy-transfer type light-emitting polymer based on poly(p-phenylene vinyl)s, which has the structural unit as represented by the following formula (1):



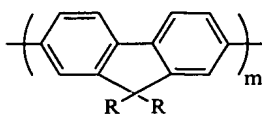
### Formula (1)

wherein  $R_1$ ,  $R_2$ ,  $R_3$ , and  $R_4$  each independently is hydrogen, alkyl, alkoxy, optionally substituted phenyl or naphthyl;  $x$  and  $y$  each is the content of the luminous element, satisfying  $0 < x \leq 1$ ,  $0 < y \leq 1$ ,  $x + y = 1$ ; there can be one luminous element or more luminous elements having a content of  $x$  and so does the luminous element having a content of  $y$ ; and  $n = 1-200$ ;

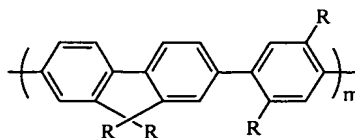
Ar<sub>1</sub> being one or two luminous structural elements selected from a group consisting of formula (2) – formula (29), wherein R, R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> each independently is hydrogen, alkyl, alkoxy, optionally substituted phenyl or naphthyl; m=1-10;



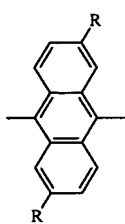
Formula (2)



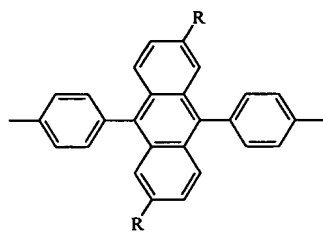
Formula (3)



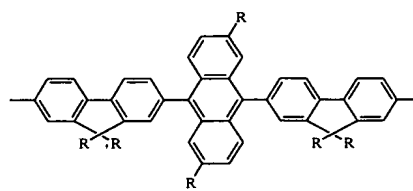
Formula (4)



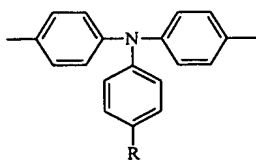
Formula (5)



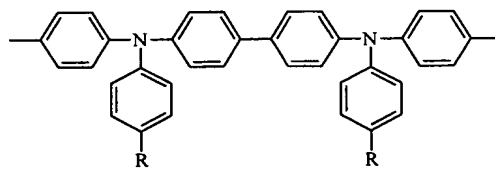
Formula (6)



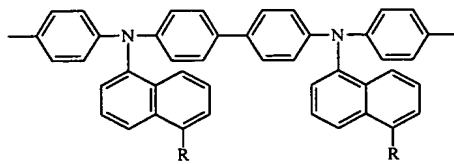
Formula (7)



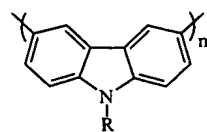
Formula (8)



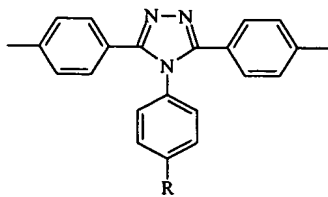
Formula (9)



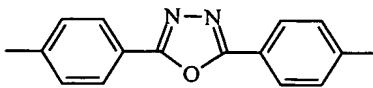
Formula (10)



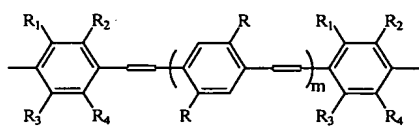
Formula (11)



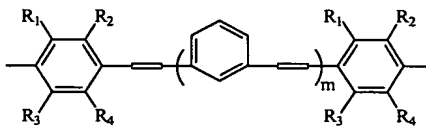
Formula (12)



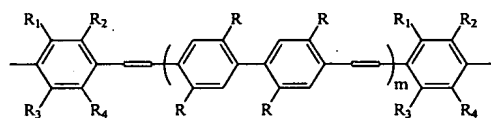
Formula (13)



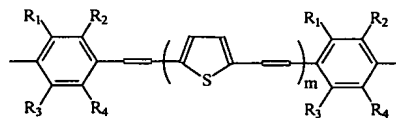
Formula (14)



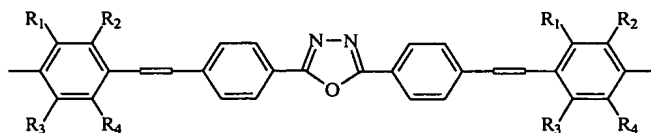
Formula (15)



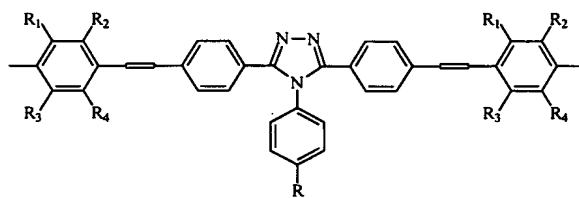
Formula (16)



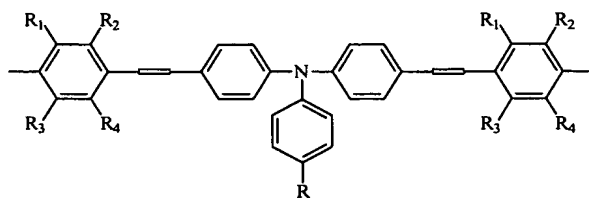
Formula (17)



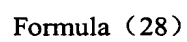
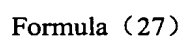
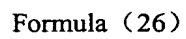
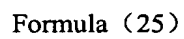
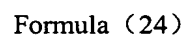
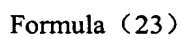
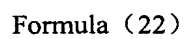
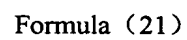
Formula (18)

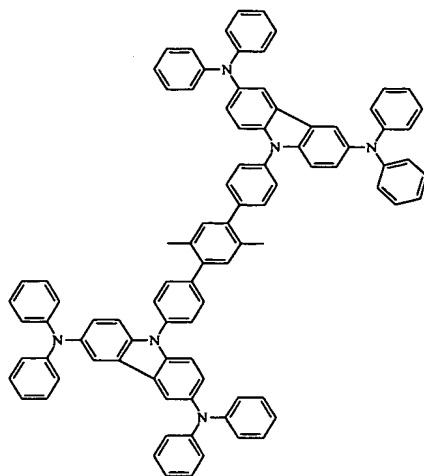


Formula (19)



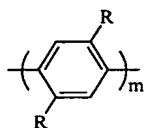
Formula (20)



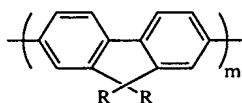


Formula (29)

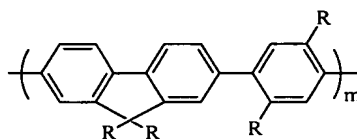
Ar<sub>2</sub> being one or two luminous structural elements selected from a group consisting of formula (30) – formula (44), wherein R each independently is hydrogen, alkyl, alkoxy, optionally substituted phenyl or naphthyl; m=1-10;



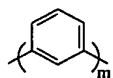
Formula (30)



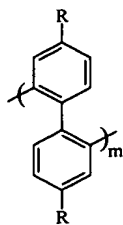
Formula (31)



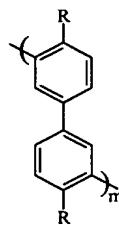
Formula (32)



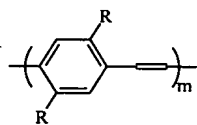
Formula (33)



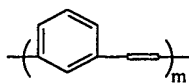
Formula (34)



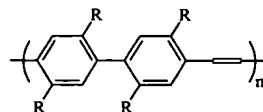
Formula (35)



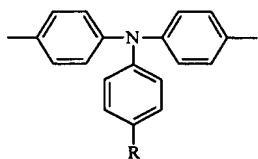
Formula (36)



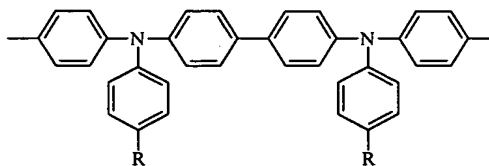
Formula (37)



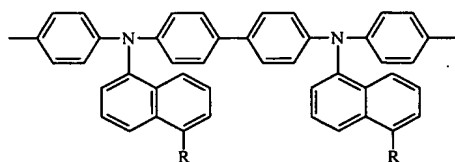
Formula (38)



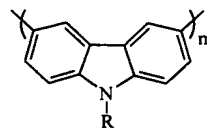
Formula (39)



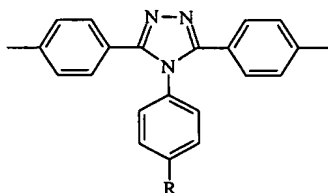
Formula (40)



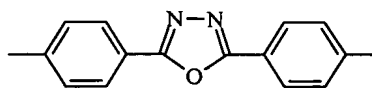
Formula (41)



Formula (42)



Formula (43)

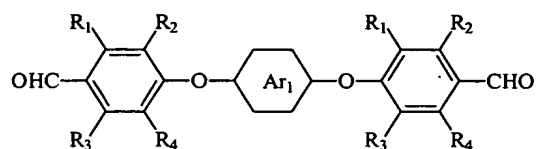


Formula (44)

2. The energy-transfer type poly(p-phenylene vinyl) polymeric luminescent material according to claim 1, wherein in formula (1),  $R_1$ ,  $R_2$ ,  $R_3$ , and  $R_4$  each independently is hydrogen, C1-18 alkyl, C1-18 alkoxy, 4-(N,N'-diphenylamino)phenyl, 4-(N-phenyl-N'-1-naphthylamino)phenyl, 4-[N,N'-di(1-naphthylamino)]phenyl, 4-carbazolylphenyl, phenyl or naphthyl.
3. The energy-transfer type poly(p-phenylene vinyl) polymeric

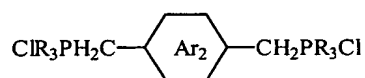
luminescent material according to claim 1, wherein in formula (2) – formula (29),  $R_1$ ,  $R_2$ ,  $R_3$ , and  $R_4$  each independently is hydrogen, C1-18 alkyl, C1-18 alkoxy, 4-(N,N'-diphenylamino)phenyl, 4-(N-phenyl-N'-1-naphthylamino)phenyl, 4-[N,N'-di(1-naphthylamino)]phenyl, 4-carbazolylphenyl, phenyl or naphthyl.

4. The energy-transfer type poly(p-phenylene vinyl) polymeric luminescent material according to claim 1, wherein in formula (30) – formula (44),  $R_1$ ,  $R_2$ ,  $R_3$ , and  $R_4$  each independently is hydrogen, C1-18 alkyl, C1-18 alkoxy, 4-(N,N'-diphenylamino)phenyl, 4-(N-phenyl-N'-1-naphthylamino)phenyl, 4-[N,N'-di(1-naphthylamino)]phenyl, 4-carbazolylphenyl, phenyl or naphthyl.
5. The energy-transfer type poly(p-phenylene vinyl) polymeric luminescent material according to claim 1, comprising only one kind of luminous element having a content of x and only one kind of luminous element having a content of y.
6. A process for preparing the energy-transfer type poly(p-phenylene vinyl) polymeric luminescent material according to claim 1, comprising the step of copolymerizing at least one  $Ar_1$ -containing aromatic dialdehyde monomer represented by general formula (45) and at least one  $Ar_2$ -containing aromatic diphosphonium monomer represented by general formula (46) at an equal molar amount,



Formula (45)

wherein  $\text{R}_1, \text{R}_2, \text{R}_3$  and  $\text{R}_4$  each independently is hydrogen, alkyl, alkoxy, optionally substituted phenyl or naphthyl;  $\text{Ar}_1$  is defined as in above formula (1);



Formula (46)

wherein  $\text{Ar}_2$  is defined as in above formula (1); R is phenyl, ethyl, ethoxyl, propyl, butyl, pentyl, hexyl or octyl.